

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): EKRON Trailer Court # 98-55-JAR
Year - Trace # - Initials

2. Date of Injection: 10 / 1 / 98 Time: 13:57 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: City of EKRON Phone: ()

4. Quadrangle/County: GUSTON / MEADE

5. Elevation: () map () measured 6. Latitude: Longitude:

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks: Modified Sinkhole

8. Formation Receiving Tracer Injection: E 210 GAL

9. Flow Conditions: () low () moderate () high

10. Induced Flow? () no () yes 13:54 / 14:05 / 9.0 minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 4.5 oz () Fluor. () Rhod. WT () OB () DY96 () other

RECORD OF DYE TRACE

Principal Investigator JOE RAY Field Personnel JACK MOODY / BOB MILLER

Precipitation before & during trace _____

ID	Location of Dye Receptors	Back-ground	Date				Results														
			10-1	10-8	10-21	11-4															
E-1	EKRON #1	-	+	+	+																
E-2	EKRON #2	-	++	+	+																
E-3	EKRON #3	-	-	-	-																
11	HAMILTON HILL BLUE WELLS	1	-	+	1																

Legend:
+ Positive B Perceptible Background (slight) / Receptor Not Changed
++ Very Positive B+ Significant Background (problematic) L Receptor lost
+++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc)
- Negative Results R Receptor removed N New Receptor Installed

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Lilly Sp Low Flow Swallet # 98 -56 -JAR
Year - Trace # - Initials

2. Date of Injection: 12 / 1 / 98 Time: 3:00 () a.m. (X) p.m.
Month Day Year

3. Owner of Injection Site: Billy Williams Phone: (502) 886-4566

4. Quadrangle/County: Church Hill / Christian

5. Elevation: 493 (X) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks: _____

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: (X) low () moderate () high

10. Induced Flow? (X) no () yes _____ / _____ _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 1 lb (X) Fluor. () Rhod. WT () OB () DY96 () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph A. Ray Field Personnel _____

Precipitation before & during trace Dry for 4 days

ID	Location of Dye Receptors	Back-ground	Date		Results														
			Duration																
10	Mill Stream Sp	N		12-13 12-16	+	-?													
1	River Bend Sp	N			-	-													
3	Pipeline Cave	N			++	/													

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Montgomery Cave # 99-14-JAR
Year - Trace # - Initials

2. Date of Injection: 3 / 14 / 99 Time: 16:53 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Unknown Phone: ()

4. Quadrangle/County: Irvington / Meade

5. Elevation: 760 map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks 0.5 cfs in two shallow karst windows beside 30' deep sinkhole

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low moderate () high

10. Induced Flow? no () yes _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 26.502 Fluor. () Rhod. WT () OB () DY96 () other _____

RECORD OF DYE TRACE

Principal Investigator JOE RAY Field Personnel JACK MOODY & PAT KEEFE
 Precipitation before & during trace _____

ID	Location of Dye Receptors	Back-ground	Date						Results								
			3-4	3-9	3-11	3-16	3-19	3-25									
2	French Creek	-	/	/	-	/	-										
9	Head Wolf Creek	-	/	-	/	/	-										
10	Head Spring Creek	-	/	/	++	-	L										
11	Hamilton Hill Bluehole	/	/	/	/	/	/	End									
12	Boiling Spring	-	-	/	-	/	-										
17	Sugar Tree Spring	-	-	/	-	-	/										
18	Sinking Cr. above Boiling	N	-	/	-	/	-R										
19	Mystic Overflow			N	-	-	/										
20	Sugar Tree Run Overflow			N	-	/	/										
21	Yellow Bank Cr	N	/	/	/	L	R										

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed

Remarks _____
 Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Cabin Swallet # 99-15-JAR
Year - Trace # - Initials

2. Date of Injection: 3 / 11 / 99 Time: 1:50 () a.m. (X) p.m.
Month Day Year

3. Owner of Injection Site: Tim Smith Phone: (502) 422-2695

4. Quadrangle/County: Lodiburg / Brockinridge

5. Elevation: 540 (X) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks 0.01 cfs into gravel

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (X) moderate () high

10. Induced Flow? (X) no () yes Pre-Injection / Post-Injection Elapsed Time minutes

11. Tracing Agent: Amt 3 oz. () Fluor. () Rhod. WT () OB () DY96 (X) other Eosine

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel Jack Moody

Precipitation before & during trace 1/2 in. 3 days later

ID	Location of Dye Receptors	Back-ground	Date															
			3-4	3-9	3-11	3-16	3-19	3-25	3-30									
2	French Creek	-	/	/	-	/	-	-										
9	Head Wolf Creek	-	/	-	/	/	-	-										
10	Head Spring Creek	-	/	/	-	+	+	-										
11	Hamilton Hill Bluehole	/	/	/	/	/	/	/										
12	Boiling Spring	-	-	/	-	/	-	-	END									
17	Sugar Tree Spring	-	-	/	-	-	/	/										
18	Sinking Cr. above Boiling	N	-	/	-	/	-	R										
19	Mystic Overflow			N	-	-	/	/										
20	Sugar Tree Run Overflow			N	-	/	/	/										
21	Yellow Bank Cr.	N	/	/	/	L	R											
22	Umin Star Spring				N	-	/	/										
23	Sinking Creek				N	/	/	/										

Legend:

+	B	/
++	B+	L
+++	NR	N
-	R	

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Dutchke's Swallet # 99-16-JAR
Year - Trace # - Initials

2. Date of Injection: 3 / 11 / 99 Time: 3:30 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Jim Collins Phone: ()

4. Quadrangle/County: Irvington /

5. Elevation: 655 () map () measured 6. Latitude: Longitude:

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks 0.15 cfs into swallet

8. Formation Receiving Tracer Injection:

9. Flow Conditions: () low () moderate () high

10. Induced Flow? () no () yes 1 Pre-injection / 1 Post-injection 2 minutes Elapsed Time

11. Tracing Agent: Amt 502 () Fluor. () Rhod. WT () OB () DY96 () other SRB

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel Jack Moody

Precipitation before & during trace 1/2" 3 days later

ID	Location of Dye Receptors	Back-ground	Date							Results
			3-4	3-9	3-11	3-16	3-19	3-25	3-30	
2	French Creek	-	/	/	-	/	-	-		
9	Head Wolf Creek	-	/	-	/	-	-	-		
10	Head Spring Creek	-	/	/	-	-	L	-		
11	Hamilton Hill Bluehole	/	/	/	/	/	/	/		
12	Boiling Spring	-	-	/	-	/	-	-		
17	Sugar Tree Spring <small>Burton's Hole</small>	-	/	++	-	/	/			
18	Sinking Cr. above Boiling	N	-	/	-	/	-R	END		
19	Mystic Overflow			N	++	-	/	/		
20	Sugar Tree Run Overflow			N	-	/	/	/		
21	Yellow Bank Cr.	N	/	/	/	LR				
22	Union Star Spring				N	-	/	/		
23	Sinking Creek				N	/	/	/		

Legend:

+	B	/
++	B+	L
+++	NR	N
-	R	

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Millay Sinkings Sp # 99-20-JAR
Year - Trace # - Initials

2. Date of Injection: 3 / 25 / 99 Time: 1600 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Harold Millay Phone: (502) 547-6341

4. Quadrangle/County: Irvington / Meade

5. Elevation: 840' () map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other Sinking Spring

Remarks _____

8. Formation Receiving Tracer Injection: Beech Cr. Limestone

9. Flow Conditions: () low () moderate () high

10. Induced Flow? () no () yes Pre-Injection / Post-Injection Elapsed Time minutes

11. Tracing Agent: Amt 27 oz. () Fluor. () Rhod. WT () OB () DY96 () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace _____

ID	Location of Dye Receptors	Date	Duration					Back-ground	Results
			3-25	3-30	4-15	4-22	5-11		
2	French Creek		-	-	-	-	-		
9	Head Wolf Creek		-	-	-	-	-		
10	Head Spring Creek		L	-	-	-	/		
11	Hamilton Hill Bluehole		/	/	L	-P	/		
12	Boiling Spring		-	-	+	-	-		
17	Sugar Tree Spring ^{Butt} _{Water}		/	/	++	+	?		
18	Sinkings Cr. above Boiling							END TRACE	
19	Mystic Overflow		/	/	/	/	-R		
20	Sugar Tree Run Overflow		/	/	/	/	/		
21	Yellow Bank Cr.						/		
22	CM Church, Left		N	-	-	/	/	/	
23	CM Church, Right		N	-	-	/	/	/	
24	Webster Overflow		N	-P	-P	/	/	/	
25	Parks Sp Run		N	+++	+++	+	/	-	
26	Sample Sp (3-19)		/	/	/	-	LN	/	

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor installed
 - Negative Results R Receptor removed P Poor Circulation

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Lawson Sinking Sp # 99-21-JMR
Year - Trace # - Initials

2. Date of Injection: 3 / 25 / 99 Time: 19:15 () a.m. (4) p.m.
Month Day Year

3. Owner of Injection Site: B.S. Lawson Phone: (502) 422-2738

4. Quadrangle/County: Irvington / Meade

5. Elevation: 645' (4) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other US Sinking Sp.

Remarks _____

8. Formation Receiving Tracer Injection: Ste. Genevieve

9. Flow Conditions: () low (4) moderate () high

10. Induced Flow? () no () yes _____ / _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 21 oz () Fluor. () Rhod. WT () OB () DY96 (Other) SRB

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace _____

ID	Location of Dye Receptors	Date	Duration	Back-ground	Results										
					3-25	3-30	4-15	4-22	5-11	5-20					
2	French Creek			-	++	+	-	-	-						
9	Head Wolf Creek			-	-	-	-	-	-						
10	Head Spring Creek			L	-	-	-	/	-						
11	Hamilton Hill Bluehole			/	/	L	-P	/	-						
12	Boiling Spring			-	-	-	-	-	-						
17	Sugar Tree Spring ^{Build} _{Whale}			/	-	-	-	-	-						
18	Sinking Cr. above Boiling														End Trace
19	Mystic Overflow			/	/	/	/	-	R						
20	Sugar Tree Run Overflow			/	/	/	/	/	/						
21	Yellow Bank Cr.														
22	CM Church, Left			N	-	-	/	/	/						
23	CM Church, Right			N	-	-	/	/	/						
24	Webster Overflow			N	-P	-P	/	/	/						
25	Parks Sp. Run			N	-	-	-	/	-						
26	Sample Sp. (3-19)			/	/	/	-	LN	/						

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed

Remarks Small sp near bridge was only one not positive. P Poor Circulation

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): 272 Swallet # 99-22-JAR
Year - Trace # - Initials

2. Date of Injection: 4 / 14 / 99 Time: 9:30 (A.M. () P.M.)
Month Day Year

3. Owner of Injection Site: _____ Phone: () _____

4. Quadrangle/County: Church Hill / Christian

5. Elevation: 482 (✓) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks _____

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (✓) moderate () high

10. Induced Flow? (✓) no () yes _____ minutes
Pre-Injection Post-Injection Elapsed Time

11. Tracing Agent: Amt 2 oz () Fluor. () Rhod. WT () OB () DY96 (✓) other SRB

RECORD OF DYE TRACE

Principal Investigator Joseph A. Ray Field Personnel _____

Precipitation before & during trace _____

ID	Location of Dye Receptors	Back-ground	Date		Results												
			4-13	4-20	4-24	4-26	2										
1	River Bend Sp	/	/	-	/												
7	Caledonia Bkt	-	-	-	-	R											
9	Boyd Lake	/	/	L	-	R											
10	Mill Stream Sp	-	-	-	/												
17	Ezell Sp	N	-	-	-	R											
18	John Zook Window	N	+R	-	-	-	Intermittent										
19	Ezell Overflow	N	-	-	-	R											
20	Riverside Cr.	N	-	/	-	R											
21	Price Sp	N	-	R													
22	Gee Sp	N	-	-	L	R											
23	Sinking Fork above Sink	N	-	/	-	R											
24	Foot spring containing crack	-	N	/	L	R											
25	Little River @ Striped Br.	N	N	/	+R												

Legend:

+	Positive	B	Perceptible Background (slight)	/	Receptor Not Changed
++	Very Positive	B+	Significant Background (problematic)	L	Receptor lost
+++	Extremely Positive	NR	Not Recovered (high water, stolen receptor, etc)	N	New Receptor Installed
-	Negative Results	R	Receptor removed		

Remarks * Positive from 99-26-JAR

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): 2nd Moore Swallet @ Disk # 99-25-JAR
Year - Trace # - Initials

2. Date of Injection: 4 / 29 / 99 Time: 1:30 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Dewayne Moore Phone: ()

4. Quadrangle/County: Church Hill / Christian

5. Elevation: 490 () map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks 0.2 cfs

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low moderate () high

10. Induced Flow? no () yes Pre-injection / Post-injection Elapsed Time _____ minutes

11. Tracing Agent: Amt 10 OZ (Fluor. () Rhod. WT () OB () DY96 () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace ~1.0 in prior

		Date																		
		<u>4-29</u>	<u>5-6</u>	<u>5-17</u>	<u>6-2</u>															
		Duration																		
ID	Location of Dye Receptors	Back-ground	Results																	
1	River Bend Sp	-	+	-	/															
7	Caledonia BH	-	+	/	-	R														
9	Boyd Lake	N	-	/	-	R														
10	Mill Stream Sp	-	-	-	/															
26	Caledonia East BH	N	+	/	-	R														
27	Caledonia South BH	N	+	/	-	R														
28	USGS "Spring"	N	+	+	/	-	R													
25	Little River @ Striped Bridge	1	/	/	/	-	R													

Legend:

+	B	/
++	B+	L
+++	NR	N
-	R	

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Garnett Swallet # 99-26-JAR
Year - Trace # - Initials

2. Date of Injection: 4 / 29 / 99 Time: 1600 () a.m. (4p.m.)
Month Day Year

3. Owner of Injection Site: Tom + Bill Garnett Phone: ()

4. Quadrangle/County: Hopkinsville / Christian

5. Elevation: 542 (4map () measured) 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other
 Remarks 0.5 cfs

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (4) moderate () high

10. Induced Flow? (4)no ()yes 1 / _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 202 () Fluor. () Rhod. WT () OB () DY96 (4)other SRB

RECORD OF DYE TRACE

Principal Investigator Joseph A. Ray Field Personnel _____

Precipitation before & during trace _____

		Date								
		4-29	5-5	6-2						
		Duration								
ID	Location of Dye Receptors	Back-ground	Results							
1	Hayslip Sp*	N	+	-	R					
2	South Fork Little R	N	-	R						
3	Round BH	4-21 M	+	R						
4	Rock Bridge Br. up from Round BH	N	/	L						
5	Double BH. Win.	N	+	R						
6	Ebb + Flow Win.	N	-	R						
7	Simons Win.	N	+	R						
8	Bath Tub Win.	N	+	R	-	Intermittent				
25	Little River @ Striped Bridge	/	/	+	R					

Legend:
 + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc)
 - Negative Results R Receptor removed N New Receptor Installed

Remarks * Changed name to Johnston Sp

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

Replicated

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Stull Sinkhole # 99-27-JAR

2. Date of Injection: ^{Rep: May} April 130 / 1 / 99 Time: 16:30 () a.m. (X) p.m.
Month Day Year

3. Owner of Injection Site: Howard Stull Phone: (270) 442-3826

4. Quadrangle/County: Irvington 1 Meade

5. Elevation: 645 (X) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks _____

8. Formation Receiving Tracer Injection: STE. GENEVIEVE

9. Flow Conditions: low () moderate () high

10. Induced Flow? () no yes 50 gal. / 150 gal. / 10 minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 4 oz. () Fluor. () Rhod. WT () OB () DY96 other Eosine

RECORD OF DYE TRACE

Principal Investigator Joe Ray Field Personnel JACK MOODY, PAT KEEFE

Precipitation before & during trace None / 2 in 5-5

ID	Location of Dye Receptors	Back-ground	Date													
			5-6	5-11	5-20	5-26	6-3	6-19	6-24	6-30	7-7	7-15	7-22			
2	French Creek		-	-	-	-	-	-	-	-	-	-	-	-	-	
9	Head Wolf Creek		-	-	-	-	-	-	/	/	/	/	-			
10	Head Spring Creek		-	/	-	-	/	-	/	/	LR					
11	Hamilton Hill Bluehole		-	/	-	-	P	L	L	-	L	-	?	?		
12	Boiling Spring		/	-	-	-	-	-	/	-	/	-	/			
17	Sugar Tree Spring		/	-	+	+	+	+	/	++	/	++	/			
25	Parks Sp. Run		-	/	+	-	-	-	/	-	/	-	/			
19	Mythic Overflow		/	+	R											
26	Sample Sp			N	/	-	/	-	/	/	/	/	/			

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed P Poor Circulation

Remarks _____

Interpretation * Low-flow velocity was > 80'/hr but < 150'/hr

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

Replicated

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Clark Sinkhole # 99-28-JAR
Rep: May 20 1999 20:10 Year - Trace # - Initials

2. Date of Injection: April 1 30 1 99 Time: 18:00 () a.m. (X) p.m.
Month Day Year

3. Owner of Injection Site: Don Clark Phone: (270) 422-2448

4. Quadrangle/County: Guston 1. Meade

5. Elevation: 635 (X) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks _____

8. Formation Receiving Tracer Injection: ST. LOUIS

9. Flow Conditions: (X) low () moderate () high

10. Induced Flow? () no (X) yes 50 g/l / 150 g/l 8 minutes
Rep. Fluor. Pre-Injection Post-Injection Elapsed Time

11. Tracing Agent: Am: 5 g () Fluor. () Rhod. WT () OB () DY96 (X) other SRB

RECORD OF DYE TRACE

Principal Investigator Joe Ray Field Personnel JACK MOODY, PAT KEEFE
 Precipitation before & during trace 2" rain on 5-5

ID	Location of Dye Receptors	Back-ground	Date													
			5-6	5-11	5-20	5-26	6-3	6-15	6-24	6-30	7-7	7-15	7-22			
2	French Creek		+	?	-	-	-	-	+	+	+	+	?	-	-	
9	Head Wolf Creek		-	-	-	-	-	-	-	-	-	-	-	-	-	
10	Head Spring Creek		-	-	-	-	-	-	-	-	-	-	-	-	-	
11	Hamilton Hill Bluehole		-	-	-	-	P	L	L	+	+	L	+	?	-	
12	Boiling Spring		-	-	-	-	-	-	-	-	-	-	-	-	-	
17	Sugar Tree Spring		-	-	-	-	-	-	-	-	-	-	-	-	-	
25	Parks Sp. Run		-	-	-	-	-	-	-	-	-	-	-	-	-	
19	Mystic Overflow		-	-	R											
26	Sample Sp		-	-	R	-	-	-	-	-	-	-	-	-	-	

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor installed
 - Negative Results R Receptor removed P Poor Circulation

Remarks _____

Interpretation Low flow velocity was > 57'/hr but < 107'/hr

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): West Big Spring Window # 00-4-JAR
Year - Trace# - Initials

2. Date of Injection: 3 / 23 / 00 Time: 18:15 () a.m. (✓) p.m.
Month Day Year

3. Owner of Injection Site: Kentucky Land, INC. Phone: ()

4. Quadrangle/County: Big Spring /

5. Elevation: 670' (✓) map () measured 6. Latitude: Longitude:

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream other

Remarks

8. Formation Receiving Tracer Injection:

9. Flow Conditions: () low (✓) moderate () high

10. Induced Flow? (✓) no () yes Pre-injection / Post-injection Elapsed Time minutes

11. Tracing Agent: Amt 1402 () Fluor. () Rhod. WT () OB () DY96 (✓) other Eosine

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel Jack Moody, Pat Kecke, Rob Blair

Precipitation before & during trace

Date	Duration	Back-ground	Results															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
3-23			-	-	/	-												
3-29	4-7		++	/	-	/												
4-7			++	/	?	-												
4-13	5-2		++	/	?	/												
5-2			-	/	-	/												
			/	/	-	R												
			-	-	/	-												
			-	/	-	-												
			++	/	?	D												
			++	/	+	-												
					/	-												
						N	/											
						-	/											
			N	/	-	R												
			N	/	-	R												

Legend:
 + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc)
 - Negative Results R Receptor removed N New Receptor Installed

Remarks

Interpretation

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Alexander Swallet # 00-8-JAR
Year - Trace # - Initials

2. Date of Injection: 4 / 18 / 00 Time: 2:30 () a.m. (✓) p.m.
Month Day Year

3. Owner of Injection Site: Alexander (Mrs.) Phone: ()

4. Quadrangle/County: Constantine / Breckinridge

5. Elevation: 720 (✓) map () measured 6. Latitude: Longitude:

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks 0.1 cfs

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (✓) moderate () high

10. Induced Flow? (✓) no () yes _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 402 () Fluor. () Rhod. WT (✓) SRB () Eosine () other

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace _____

ID	Location of Dye Receptors	Back-ground	Date					Results
			4-18	4-24	5-1	5-8	5-9	
7	Blue Fork @ bridge		-	-	-	-		
8	Stoney Fork Sp.		-	++	-	-		
13	Duncan Valley @ bridge		R					
14	Muddy Prong BH		/	/	/	-		
17	McGuffin Br		/	-	/	-		
18	Drakes Cr		/	-D	-	-		
19	Keesee Karst Window		N	/	/	/		
20	Duncan Valley N. Sp.		N	-	/	-		
21	Duncan Valley E.		N	-	/	-		

END Trace

Legend:
+ Positive B Perceptible Background (slight) / Receptor Not Changed
++ Very Positive B+ Significant Background (problematic) L Receptor lost
+++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor installed
- Negative Results R Receptor removed D Dry Receptor

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Polly Brown Springs # 00-9-JAR
Year - Trace # - Initials

2. Date of Injection: May / 12 / 2000 Time: 19:13 () a.m. (X) p.m.
Month Day Year

3. Owner of Injection Site: Wayne Roberts Phone: (270) 828 3351

4. Quadrangle/County: Guston / Meade

5. Elevation: 800 (X) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks _____

8. Formation Receiving Tracer Injection: St. Genevieve

9. Flow Conditions: () low (X) moderate () high

10. Induced Flow? (X) no () yes _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 802 (X) Fluor. () Rhod. WT () SRB () Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Jack Moody Field Personnel Pat Keefe + Beverly Oliver
 Precipitation before & during trace 0.6 inch night before, none on 5/2

ID	Location of Dye Receptors	Back-ground	Date				Results						
			5-1	5-16	5-23	6-1							
1	Fiddle Sp		-	-	-	-							
2	Connors Sp		-	/	/	/							
3	Flat Rock Sp		?	++	+	-							
4	Shooting Star Sp		?	/	/	/							
5	Board Cave Sp		-	/	/	-							
7	Blue Fork @ Bridge		-	-	-	/							
8	Stoney Fork Sp.		see 00-7	-	-	/							
9	Ross Cave Win.		?	+	+	-							
10	Gilpin Win.		-	-	-	-							
24	Boiling Sp		-	+	-	-							
25	Park's Sp. Run		-	/	/	-							
26	French Cr.		-	/	-	/							
27	Hamilton Hill BH		-	/	?	/							
28	Head of Doe Run		++	++	+	?							

END TRACE

Legend: + Positive B Perceptible Background (slight) / Receptor Not Charged
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed D Dry Receptor

Remarks _____
 Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Red Barn Sinking Sp # 00-10-JAR
Year - Trace # - Initials

2. Date of Injection: 5 / 3 / 00 Time: 1400 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: _____ Phone: () _____

4. Quadrangle/County: Big Spring / Meade

5. Elevation: 1730 (map) () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks: 0.05 cfs

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low () moderate () high

10. Induced Flow? () no () yes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 80Z () Fluor. () Rhod. WT () SRB () Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace 1-2 inches by evening

		Date	5-3 59 5-14 523 6-1					
		Duration						
ID	Location of Dye Receptors	Back-ground	Results					
1	Fiddle Spring	-	-	-	-	-		
2	Connors Sp	/	-	/	/	/		
3	Flat Rock Sp	-	-	-	-	-		
4	Shooting Star Sp	/	-	/	/	/		
5	Board Cave Sp	/	-	/	/	-		
7	Blue Fovle @ Bridge	-	-	-	-	/		
8	Stoney Fork Sp.	-	-	-	-	/		
9	Ross Cave Win.	D	-	-	-	-		
10	Gilpin Win.	-	-	-	-	-		
24	Boiling Sp	N	-	-	-	-		
25	Park Sp Run	N	-	/	/	-		
26	French Cr.	N	-	/	-	/		
27	HAMILTON Hill BH	N	-	/	-	/		
28	Head of Doe Run	N	+	?	+	-		

Legend:
 + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed D Dry Receptor

Remarks: _____

Interpretation: _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Lost Run Swallet # 00-11-JAR
Year - Trace # - Initials

2. Date of Injection: 5 / 4 / 00 Time: 10:00 (5 a.m. () p.m.)
Month Day Year

3. Owner of Injection Site: Eddy Dyer Phone: () _____

4. Quadrangle/County: Custer / Breckinridge Co

5. Elevation: 575 (Xmap () measured) 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks 3 of 5

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (4 moderate () high

10. Induced Flow? (4no ()yes _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 0.5 oz (4Fluor. () Rhod. WT () SRB () Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace ~1" day before

ID	Location of Dye Receptors	Duration	Date		Results																		
			5-4	5-9	5-16																		
11	Buffalo Cr Sp	-		++	+																		
12	Dyer Cave	-		-D	/																		
30	Cr @ Richard Moore Rd	N		-	/																		
31	North Fork @ 1073	N		-	/																		

Legend:
+ Positive B Perceptible Background (slight) / Receptor Not Changed
++ Very Positive B+ Significant Background (problematic) L Receptor lost
+++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
- Negative Results R Receptor removed D Dry Receptor

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Lucas Swallet # 00-12-JAR
Year - Trace # - Initials

2. Date of Injection: 5 / 4 / 00 Time: 11:00 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Brenda Lucas Phone: (270) 536-3705

4. Quadrangle/County: Garfield / Breckinridge

5. Elevation: 700' (map () measured) 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream () sinkhole () water well () injection well
 losing stream () karst window () monitoring well () septic system
 lagoon () cave stream () sinking spring () other

Remarks 0.2 cfs

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (moderate) high

10. Induced Flow? (no) yes _____ minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 60z () Fluor. () Rhod. WT () SRB (Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace 1" day before

ID	Location of Dye Receptors	Date	Duration	Back-ground	Results														
					5-4	5-9	5-11	5-16	5-22	6-1	6-7								
7	Blue Fork @ Bridge	-	-	/	-	-	/	/											
8	Stoney Fork Sp	-	-	/	-	-	/	/											
11	Buffalo Cr. Sp.	-	-	/	-	/	/	/											
12	Dyer Cave	-	-	/	/	/	/	/											
30	Cr. @ Richard Moore Rd	N	-	/	/	/	/	/											
31	North Fork @ 1073	N	-	/	/	/	/	/											
32	Turpin Sp				N*	-	/	/											
33	Watt Hole				NW-	/	/	++	/										
34	Hardin Springs				NW-	/	+	?	-										

Legend: + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed D Dry Receptor
 W Water Sample

Remarks * No positive in 5.5 km

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Keesee Br. Swallet # 06-13-JAR
Year - Trace # - Initials

2. Date of Injection: 5 / 4 / 00 Time: 15:15 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: _____ Phone: () _____

4. Quadrangle/County: Constantine / Hardin

5. Elevation: 590' (✓) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks _____

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: () low (✓) moderate () high

10. Induced Flow? (✓) no () yes
Pre-injection Post-injection Elapsed Time minutes

11. Tracing Agent: Amt 1 oz (✓) Fluor. () Rhod. WT () SRB () Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel _____

Precipitation before & during trace 1" day before

ID	Location of Dye Receptors	Duration	Back-ground	Date													
				5-9	5-16	5-23											
7	Blue Fork @ Bridge	-	-	-	-												
8	Stoney Fork Sp	B	see 00-7	-	-												
14	Muddy Fork BH	-	-	/	/												
17	McGuffin Br	-	-	/	/												
18	Head Drakes Cr.	-	++	+	/												
19	Keesee Karst Win.	-	/	/	/												
20	Duncan Valley N. Sp	-	-	/	/												
21	Duncan Valley E.	-	-	/	/												

Legend:
 + Positive B Perceptible Background (slight) / Receptor Not Changed
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed D Dry Receptor

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): HICKS SPRING # 00-15-JAR
Year - Trace # - Initials

2. Date of Injection: 5 / 16 / 2000 Time: 20:00 () a.m. (x) p.m.
Month Day Year

3. Owner of Injection Site: DAPHNE LAIRMORE Phone: (270) 828-2871

4. Quadrangle/County: BIO SPRING / MEADE

5. Elevation: 710 (x) map () measured 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream () sinkhole () water well () injection well
 losing stream () karst window () monitoring well () septic system
 lagoon () cave stream () other

Remarks _____

8. Formation Receiving Tracer Injection: STE GENEVIEVE

9. Flow Conditions: (x) low () moderate () high

10. Induced Flow? (x) no () yes Pre-injection _____ Post-injection _____ Elapsed Time _____ minutes

11. Tracing Agent: Amt 4 oz. () Fluor. () Rhod. WT () OB () DY96 (x) other EOINE

RECORD OF DYE TRACE

Principal Investigator JOE RAY Field Personnel JACK MOODY/PAT KEEFE

Precipitation before & during trace _____

ID	Location of Dye Receptors	Date							Back-ground	Results
		5-16	5-23	6-1	6-7	6-13	6-21			
1	Fiddle Sp	-	-	-	-	-	-	-		
2	Connors Sp	/	/	/	/	/	/	/		
3	Flat Rock Sp	-	-	+	?	+	-	-		
4	Shooting Star	/	/	/	/	/	/	/		
5	Board Cave Sp	/	/	?	-	/	-	-		
7	Blue Fork @ Bridge	-	-	/	/	/	/	/	END Trace	
8	Stoney Fork Sp	-	-	/	/	/	/	/		
9	Ross Cave Win.	-	-	-	?	+	-	-		
10	Gilpin Win	-	-	-	-	/	/	-		
24	Boiling Sp	-	-	+	/	-	-	-		
25	Reams Sp Run	/	/	-	-	/	/	-		
26	French Cr.	/	-	/	-	-	-	-		
27	Hamilton Hill BH	/	-	/	-	-	-	-		
28	Head of Doe Run	-	-	-	-	/	-	-		

Legend:

+	B	/
++	B+	L
+++	NR	N
-	R	

Remarks _____

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Haysville Sinkhole # 00-16-JAR
Year - Trace # - Initials

2. Date of Injection: 6 / 1 / 00 Time: 4:00 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: Butler Phone: ()

4. Quadrangle/County: Guston / Meade

5. Elevation: 675 () map () measured 6. Latitude: Longitude:

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks

8. Formation Receiving Tracer Injection:

9. Flow Conditions: () low moderate () high

10. Induced Flow? () no yes 100 gal / 500 gal 45 minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 15oz () Fluor. () Rhod. WT SRB () Eosine () other

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel Jim Currens/Randy Paylor (KGS)

Precipitation before & during trace

ID	Location of Dye Receptors	Date	Duration														
			6-1	6-7	6-13	6-21	7-6	7-14	7-21	9-29							
		Back-ground	Results														
1	Fiddle Sp.	-	-	-	-	-	/	-									
3	Flat Rock Sp.	-	-	-	-	-	/	-D									
5	Board Cave Sp.	-	-	/	-	-	/	-									
9	Ross Cave Win.	-	-	-	-	-	/	/									
10	Gilpin Win.	-	-	/	/	/	/	/									
24	Bailins Sp.	-	/	-	+	+	-	-D	END TRACE								
25	Parks Run	-	-	/	/	-	/	/									
26	French Cr.	/	-	-	-	/	-	-									
27	Hamilton Hill BH	/	-	-	-	L	-	-									
28	Head Doe Run	-	-	/	-	/	/	-									
35	Burtons Hole	N	-	/	-	/	/	-									

Legend: + Positive B Perceptible Background (slight) / Receptor Not Charged
 ++ Very Positive B+ Significant Background (problematic) L Receptor lost
 +++ Extremely Positive NR Not Recovered (high water, stolen receptor, etc) N New Receptor Installed
 - Negative Results R Receptor removed D Dry Receptor

Remarks

Interpretation Flow velocity > 2112 ft/day < 3520 ft/day (est. 2600 ft/day for 16 days)

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

TRACER INJECTION SITE

1. Name of Dye Trace (Site Location): Dooley Sinkhole # 00-17-JAR
Year - Trace # - Initials

2. Date of Injection: 6 / 21 / 00 Time: 14:00 () a.m. () p.m.
Month Day Year

3. Owner of Injection Site: _____ Phone: () _____

4. Quadrangle/County: Guston / Meade

5. Elevation: 710' (Amap () measured) 6. Latitude: _____ Longitude: _____

7. Description of Injection Site:
 sinking stream sinkhole water well injection well
 losing stream karst window monitoring well septic system
 lagoon cave stream sinking spring other

Remarks _____

8. Formation Receiving Tracer Injection: _____

9. Flow Conditions: low () moderate () high

10. Induced Flow? () no yes 50 / 350 / 60 minutes
Pre-injection Post-injection Elapsed Time

11. Tracing Agent: Amt 14 oz Fluor. () Rhod. WT () SRB () Eosine () other _____

RECORD OF DYE TRACE

Principal Investigator Joseph Ray Field Personnel Jack Moody

Precipitation before & during trace _____

ID	Location of Dye Receptors	Back-ground	Date														
			6-21	7-6	7-10	7-20	7-27	8-1	8-8	8-16	8-23	8-30	9-29				
1	Fiddle Sp	-	-	/	-	/	/	/	/	/	/	/	-				
3	Flat Rock Sp	-	-	/	-D	/	/	/	/	/	/	/	L				
5	Board Cave Sp	-	-	/	-	/	/	/	/	/	/	/	-				
9	Ross Cave Win.	-	-	/	/	/	/	/	/	/	/	/	/				
24	Boiling Sp	-	-	-	-D	-	-	-	-	-	-	-	-				
26	French Cr.	-	/	-	-	-	-	-	-	/	B	+	+				
27	HAMILTON Hill BH	-	L*	-D	?	-D	2x B	++	/	/	++	+	-				
28	Head doe Ran	B	/	/	B	/	-	/	/	/	B	-	-				
35	Burtons Hole	-	/	/	-	/	-	/	-	/	/	/	/				

Legend:

+	B	/
++	B+	L
+++	NR	N
-	R	D

Remarks Recovered 7-10; Negative.

Interpretation _____

Please identify injection and recovery sites on photocopy of topographic map. Kentucky Division of Water 10/1993

